CLAIMS

1. An electronic system for determining three-dimensional positions within a measuring volume, comprising

at least one electronic camera for recording of at least two images with different viewing angles of the measuring volume,

an electronic processor that is adapted for real-time processing of the at least two images for determination of three-dimensional positions in the measuring volume of selected objects in the images.

2. An electronic system according to claim 1, comprising

one electronic camera for recording images of the measuring volume, and

an optical system positioned in front of the camera for interaction with light from the measuring volume in such a way that the at least two images with different viewing angles of the measuring volume are formed in the camera.

3. An electronic system according to claim 1 or 2, wherein the processor is further adapted for recognizing predetermined objects.

4. An electronic system according to claim 3, wherein the processor is further adapted for recognizing body parts of a human body.

5. An electronic system according to claim 4, wherein three-dimensional positions of body parts are used for computer control.

6. An electronic system according to claim 4, wherein three-dimensional movements of body parts are used for computer control.

7. An electronic system according to any of the preceding claims, wherein the processor is further adapted for recognizing colour patches worn by a human object in the measuring volume.

8. An electronic system according to any of the preceding claims, wherein the processor is further adapted for recognizing retro-reflective objects worn by a human object in the measuring volume.

9. An electronic system according to any of the preceding claims, wherein the processor is further adapted for recognizing exposed parts of a human body by recognition of human skin.

10. An electronic system according to any of the preceding claims, wherein the processor is further adapted for recognizing colors by table look-up, the table entries being color values of a color space, such as RGB-values.

11. An electronic system according to any of claims 4-10, wherein the processor is further adapted for determining three-dimensional positions of body parts in relation to each other.

12. An electronic system according to claim 11, wherein the processor is further adapted for determining human body joint angles.

13. An electronic system according to any of claims 4-12, wherein the processor is further adapted for determining performance parameters related to specific body positions.

14. An electronic system according to claim 13, wherein the processor is further adapted for determining performance parameters of specific human exercises.

15. An electronic system according to claim 14, wherein at least some of the performance parameters are physiotherapeutic parameters.

16. An electronic system according to any of claims 13-15, wherein the processor is further adapted for providing a specific output in response to the determined performance parameters.

17. An electronic system according to claim 16, further comprising a display for displaying a visual part of the output.

18. An electronic system according to claim 15 or 16, further comprising a sound transducer for emitting a sound part of the output.

19. An electronic system according to any of the preceding claims, wherein the optical system comprises mirrors for re-directing light from the measuring volume towards the camera.

20. An electronic system according to any of the preceding claims, wherein the optical system comprises prisms for re-directing light from the measuring volume towards the camera.

21. An electronic system according to any of the preceding claims, wherein the optical system comprises diffractive optical elements for re-directing light from the measuring volume towards the camera.

22. An electronic system according to any of the preceding claims, wherein the optical system is symmetrical about a symmetry plane and the optical axis of the camera substantially coincides with the symmetry plane.

23. A combined system comprising at least two systems according to any of the preceding claims, having overlapping measurement volumes.

24. A method of calibrating a system according to any of the preceding claims, comprising the steps of

positioning of a screen in the measuring volume of the system,

projecting a calibration image with known geometrical features onto the screen,

for specific calibration image pixels, determining the corresponding two image pixels in the camera, and

calculating the line of sight for substantially each pixel of the camera sensor.

25. A method according to claim 24, wherein the calibration image is generated by a projector with at least ten times less geometrical distortion than the system.

26. A method according to claim 24 or 25, wherein the calibration image is a black and white image.

27. A method according to claim 26, wherein the calibration image comprises one black section and one white section divided by a horizontal line.

28. A method according to any of claims 24-26, wherein the calibration image comprises one black section and one white section divided by a vertical line.

29. A method according to any of claims 24-28, wherein the step of projecting a calibration image comprises sequentially projecting a set of calibration images onto the screen.

30. A system for assessment of movement skills in a three-dimensional space, comprising an electronic system according to any of claims 1-23.

31. A computer interface utilizing three-dimensional movements, comprising an electronic system according to any of claims 1-23.

32. An interface to a computer game utilizing three-dimensional movements, comprising an electronic system according to any of claims 1-23.

33. A system for motion capture of three-dimensional movements, comprising an electronic system according to any of claims 1-23.